REMARKS

Status of the claims:

Claims 1-26 are pending, claim 27 was cancelled, and claims 28-49 were withdrawn as directed to a non-elected species. Claim 1 was amended in the response filed April 7, 2003. For the examiner's convenience, a listing of the current status of the claims is attached.

35 U.S.C. § 103(a) Rejections

Claims 1-4, 7-9 and 12-23 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,609,806 to Walsh et al. ("Walsh") in view of U.S. Patent No. 5,098,496 to Breitigam et al. ("Breitigam").

The Cited Art Does Not Teach A Precomposite having a Composition in a Solid Phase Wherein the Precomposite is Resistant to Buckling of its Fibers

As explained in Applicant's April 7, 2003 amendment, the claims require a precomposite having a resin-containing composition that has been subject to ionizing irradiation in order partially to polymerize the resin so that the composition is in a solid phase wherein said precomposite is resistant to buckling of said fibers upon flexure.

Neither Walsh nor Breitigam teach or suggest a precomposite comprising a composition in a solid phase wherein the precomposite is resistant to buckling. Rather, the "formable prepreg" of Walsh is an incompletely cured prepreg having only a "thicken[ed] thermosetting resin matrix." (Walsh, col. 2, line 41). The prepregs are not in solid form at this stage. As explained in Walsh, the resin in the prepregs is still viscous and has merely been "thicken[ed]" to "increase . . the viscosity of the resin such that the resin is transformed from a liquid to a non-dripping paste form. The resulting paste form of the resin is typically referred to as 'B-stage.'"

However, just because a prepreg has reached B-stage does not mean that the precomposite is in a solid phase such that the fibers in the prepreg are resistant to buckling. One of ordinary skill in the art would not understand that a prepreg that has reached the B-stage would be in a solid phase or that the prepreg would be resistant to buckling.

The B-stage is well defined in the art. For instance, as described in the attached paper "mse423b" from Professor R. Bordia, the B-stage is defined as an "intermediate stage in the reaction of a thermo setting resin. Most prepregs are at this stage to allow easier handling.". Other definitions of "B-stage" can be found for example at http://www.cada.it/glossary/a.html: a copy of which is attached, and which defines B-stage as:

> An intermediate stage in the reaction of certain thermosetting resins in which the material softens when heated, and is plastic and fusible but may not entirely dissolve or fuse. Also called resistol. The resin in an uncured prepreg or premix is usually in this stage.

Additionally, B-stage is defined at http://plastics.about.com/library/glossary/b/bldef-b815.htm as:

> An intermediate stage in the reaction of certain thermosetting resins in which the material swells when in contact with certain liquids and softens when heated, but may not entirely dissolve or fuse. The resin in an uncured prepreg or premix is usually in this stage. Also known as resistol or resolite. See A-stage, C-stage.

However, the present invention requires more than that the resin be in a B-stage. The invention requires that the precomposite be exposed to ionizing radiation so that the resin-comprising composition is in a solid phase wherein the precomposite is resistant to buckling of the fibers.

The table of page 20 of the instant specification gives the (1) surface appearance, (2) the Shore D hardness, (3) the resistance to buckling, and (4) the resistance to pressure for nine different times of exposure to UV irradiation. Only four out of nine are appropriate to meet

the definition of a solid precomposite that is resistant to buckling. However, all the nine examples fall in the definition of B-stage.

Because the precomposites of the present invention are in a solid phase, the resin-based composition will not expand outside the precomposite during deformation or during later heat treatment under pressure. (*See* spec. p. 10). Additionally, because the composition is in a solid phase, the resin will not flow during later treatment of the precomposite. (Spec. p. 6). Additionally, the precomposite has sufficient cohesion to be installed in an open mold, with the mechanical stresses which this presupposes, without risking "wringing" of the fibers during which the amount of resin of the preform would decrease uncontrollably.

The Office Action contends that the precomposite can be at a non-tacky B stage which can be cut with scissors. However, in this example, the prepreg was not exposed to ionizing radiation, as required by the claims. Nor is there any indication that the fibers in the prepreg are resistant to buckling.

Thus, Walsh does not teach or suggest a precomposite in which the composition is in a solid phase and that is resistant to buckling, and Breitigam does not teach or suggest these missing limitations. For at least this reason, the cited art does not render the claimed invention obvious.

The Cited Art Does Not Teach Applying Solid Precomposite Against a Non-Planar Support of Snuggly Stacking Solid Precomposites

Additionally, Walsh does not teach or suggest taking lengths from a precomposite having a composition in a solid phase ("solid precomposites" in shorthand) and applying them to a non-planar support by stacking lengths of the solid precomposites on one another. Nor does Walsh teach or suggest how to arrange solid precomposites so as to fit snuggly against a non-planar support. Breitigam does not satisfy these missing limitations.

The Office Action mailed November 5, 2002 contended that it is "conventional" to form an article by stacking strips of prepreg on a shaped mold and curing them to form an article. The Office Action further contended that one skilled in the art "would understand that the prepregs would be fitted snugly against each other to prevent gaps which reduce the strength of the final product" and that "one in the art would appreciate that any type of mold could be used dependent of the intended final product shape, and that it would have been obvious to use a nonplanar mold when forming a nonplanar article." (OA, p. 4).

Applicant strongly disagreed in the April 7, 2003 response that any such knowledge is common or well known in the art and requested the Examiner to provide a citation to a reference or an affidavit showing that such information is conventional or well known in the art. (M.P.E.P. § 2144.03). In response, the Examiner has cited applying multiple layers of tissue paper such as when making paper mache.

Applicant again maintains that such knowledge is not well known in the relevant art and again requests the Examiner to provide citation to a reference or an affidavit showing that such information is well known in the art.

The paper mache art used to make paper mache goods, such as piñatas, is most certainly not analogous to the present invention which involves manufacturing sturdy composite parts, which are subject to high mechanical stresses.

The challenge in the prior art has precisely been how to efficiently and effectively produce sturdy nonplanar articles that can withstand high mechanical stresses. Prior to the present invention, one skilled in the art could not efficiently and effectively mold a solid prepreg/precomposite against a nonplanar support and obtain a composite having superior stress resistant properties. Prior to the present invention, if a solid prepreg was placed on a non-planar

support, the bending of the solid prepregs would create internal stresses in the prepregs that would weaken the strength of the prepregs. Because of the internal stresses in the solid prepreg, the resulting product would be weakened and may not withstand high mechanical stresses. Conversely, use of non-solid prepregs would decrease the internal stresses of the prepreg upon molding on the non-planar support, thereby producing a sturdy product. However, this process would have the problem associated with the use of non-solid resin.

Neither Walsh nor Breitigam teach or suggest stacking solid precomposites to fit against a non-planar support. Both Walsh and Breitigam use non-solid structures which only reach the solid stage after they have been formed into shape. Thus, contrary to what is suggested in the Office Action, Walsh does not suggest fitting solid precomposites/prepregs snuggly against each other and the support. As none of the cited art teaches stacking solid precomposites to fit against a non-solid support, and the Examiner has not provided evidence that such knowledge is known to one of skill in the relevant art the cited art does not teach all of the claim withdrawal of the rejection is requested.

In view of the foregoing, Applicant requests withdrawal of the objections and rejections and prompt allowance of all the pending claims.

CONCLUSION

Applicant does not believe that any fee is required in connection with the submission of this document. However, should any fee be required, or if any overpayment has been made, the Commissioner is hereby authorized to charge any fees, credits or overpayments to Deposit Account 02-4377.

Respectfully submitted,

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